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Studies on Mesostigmatid Mites Parasitic on Mammals and Birds in Japan

IV. *Steatonyssus nakazimai* sp. nov. (Acarina, Macronyssidae), a Specific Parasite of *Glirulus japonicus* (Rodentia, Muscardinidae)

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The large, macronyssid genus *Steatonyssus* KOLENATI includes more than thirty species, which are parasitic on bats of the family Vespertilionidae and less often on Rhinolophidae and Emballonuridae with incidental associations with insectivores recorded in two species (RADOVSKY, 1967). Only a single species, *Steatonyssus patricinae* DOMROW is described from the carnivorous marsupial, *Dasyurus* sp. (Dasyuridae), which lives in burrows in sandhills and is considered unlikely to come into contact with bats (DOMROW, 1969). The present new mite is the second member of the genus *Steatonyssus* exclusively parasitic on other host than Chiroptera. This rather exceptional host relationship of the mite must have been established through sharing habitats by the host and Chiroptera in the course of speciation.

Steatonyssus nakazimai sp. nov.

(Figs. 1–3)

Female (Fig. 1). Measurements based on 10 specimens are given as the ranges and means in parentheses in microns.

Dorsum (Fig. 1, A). Podosomal shield reticulated, 305–330 (312.9) long, 260–280 (275.5) wide at level of z_6 , with 11 pairs of setae as shown in Fig. 1, A; submedian setae, j_1 – j_6 and z_5 , shorter than marginal ones but setae j_3 not reduced, 28–33 (30.7) long; j_4 35–43 (37.7), j_5 25–31 (28.6), j_6 28–38 (34.1), z_3 50–60 (55.4), z_6 47–63 (56.9), distance between j_5 and z_5 34–43 (39.2). Opisthosomal shield reticulated, 350–368 (363.6) long, 210–230 (219.0) wide at level of setae J_1 , bearing 3 pairs of anterior long setae, J_1 – J_3 , and 4 pairs of posterior minute setae, J_5 , S_4 – S_5 and Z_5 ; J_2 21–30 (25.6), J_3 18–29 (20.7), J_5 3–5 (3.8), distance between J_2 and J_3 103–123 (110.0), Z_5 10–13 (10.5), S_4 and S_5 8–10 (9.4). Setae on soft integument normally setiform, numbering

48–55 (50.4) on one side; posterior setae 68–80 (74.4) long. Peritreme ending on posterior fourth of coxa II. Peritremal shield not interrupted, extending to posterior level of coxa I.

Venter (Fig. 1, B). Sternal shield 45–50 (47.6) long by 138–153 (139.0) wide at level of setae st_2 , with 2 pairs of slits, chitinized very weakly and coloured differently on posterior margin; st_1 40–45 (42.2), st_2 60–66 (63.7), st_3 75–78 (75.8). Genitoventral shield 105–128 (122.1) from level of genital setae which are 75–90 (82.8) apart. Anal shield 113–130 (124.0) long to base of postanal seta, 83–93 (87.2) wide at middle of anus; paranal setae slenderer than postanal seta, 40–45 (42.3) long; postanal seta 33–35 (34.6) long. Number of setae on one side of integument 42–55 (50.4).

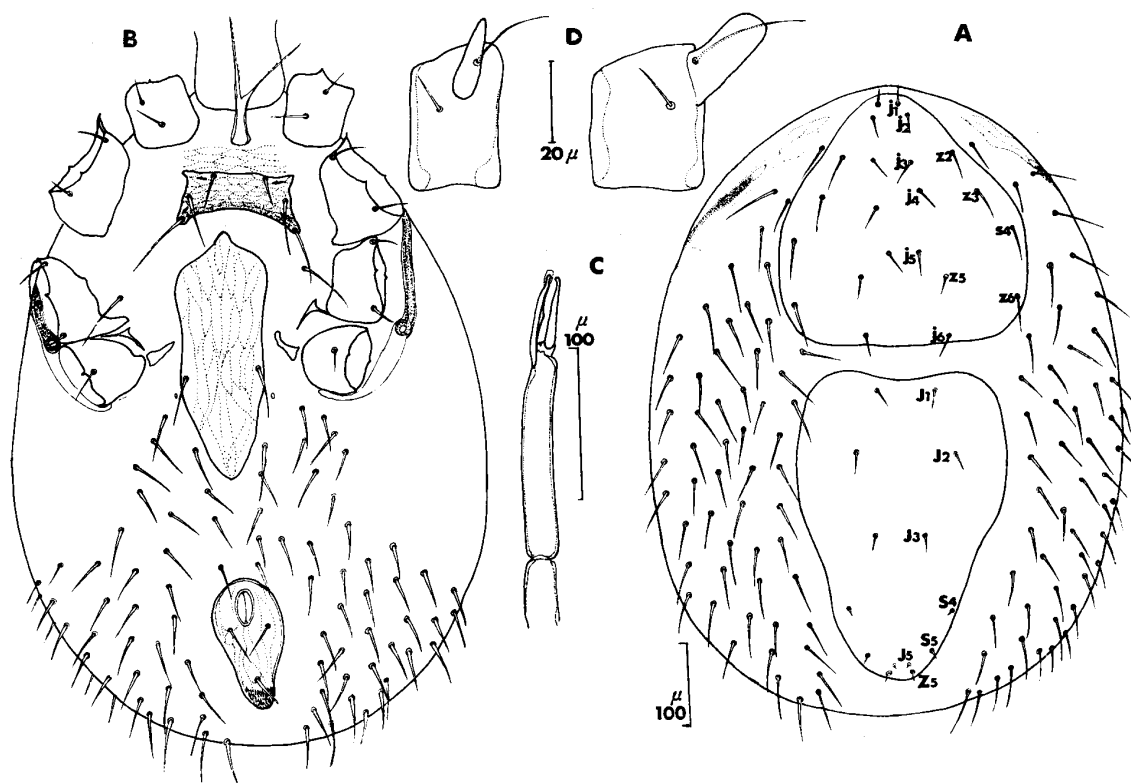


Fig. 1. *Steatonyssus nakazimai* sp. nov., female. — A–B. Idiosoma in ventral and dorsal views. — C. Chelicera. — D. Palptrochanter.

Gnathosoma. Deutosternum with 9 (rarely 8) teeth in a single file. Chelicera as illustrated in Fig. 1, C; basal segment 35–40 (37.2), 2nd segment 120–130 (124.5), chela 45–50 (48.2) long. Process of palptrochanter as in Fig. 1, D.

Legs. Setation on each segment of all legs normal. Length of tibia I 80–88 (83.5), tarsus I 130–145 (138.1), tibia IV 76–83 (79.5) and tarsus IV 143–150 (147.4).

Male (Fig. 2). Measurements are based on the allotype and a single paratype. Dorsum (Figs. 2, A). Dorsal shield entire with irregular, shallow erosion at

demarcation between podosomal and opisthosomal parts: 503–500 long and 245–258 wide at level of setae z_6 ; setation variable and assymetrical on the two specimens; an opisthosomal seta Z_1 present on one side of the shield in the allotype and a podosomal seta s_4 on the shield in a paratype; normal number probably 21 pairs. Peritreme extending to posterior fourth of coxa II; peritremal shield terminating slightly anterior to peritreme. Number of setae on one side of soft integument 19–20; posterior setae 38 long.

Venter (Fig. 2, B). Holoventral shield with 3 pairs of sternal, a pair of genital, 3 pairs of ventral, a pair of paranal and a postanal setae; metasternal setae off the shield. Extra seta present paired with st_2 and one ventral seta lacking in the allotype as illustrated in Fig. 2, B.

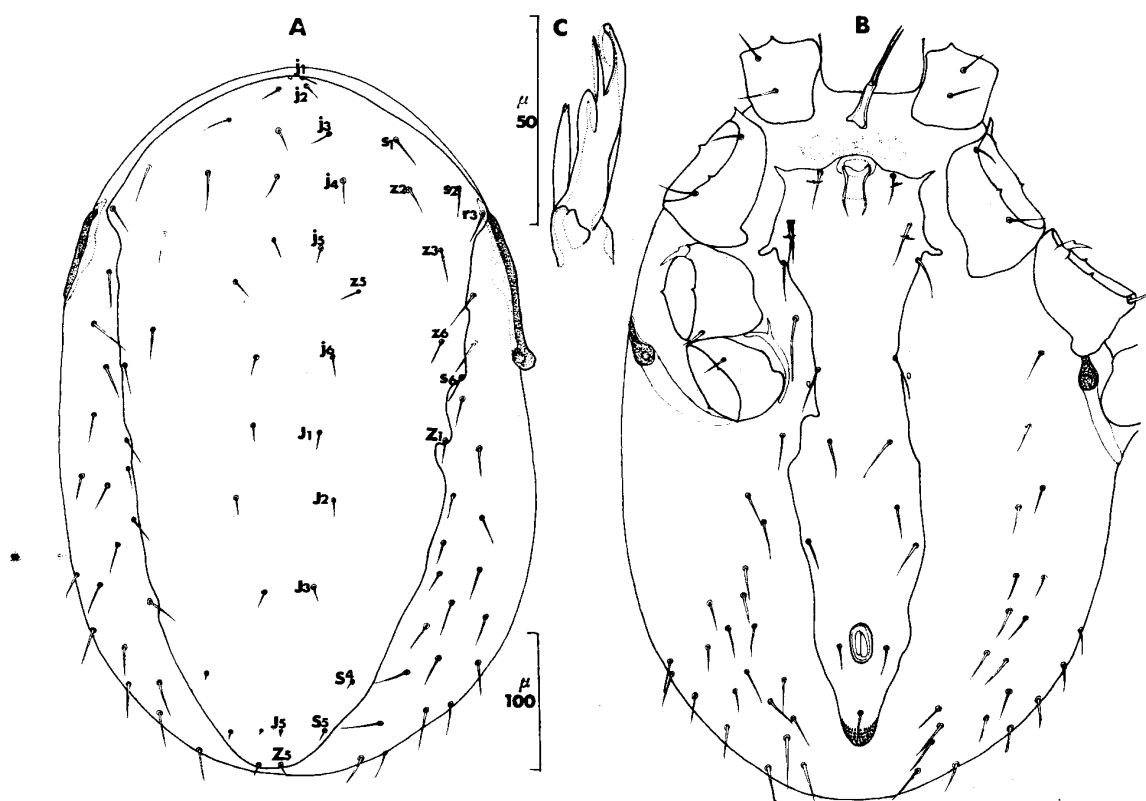


Fig. 2. *Steatonyssus nakazimai* sp. nov., male. — A–B. Idiosoma in dorsal and ventral views. — C. Chelicera.

Gnathosoma. Distal part of chelicera as in Fig. 2, C; basal segment of chelicera 25–25, 2nd segment 79–75 and spermadactyl 45–48 long.

Legs. Setation as in female. Anterior seta on coxa III inflated basally. Tibia I 63–65, tarsus I 98–108, tibia IV 61–63 and tarsus IV 103–110 long.

Protonymph (Fig. 3). Measurements based on 10 specimens.

Dorsum (Fig. 3, A). Podosomal shield 175–200 (184.7) long, 145–165 (153.5)

wide at level of setae z_6 , bearing 11 pairs of setae. Two pairs of small mesonotal scutella present around setae J_1 . Pygidial shield 45–60 (51.9) long with maximum width 90–100 (97.8), bearing 3 pairs of long and a single pair of minute setae. Setae on both shields and on integument well developed; j_3 17–20 (18.7), z_3 30–38 (5), J_3 34–40 (35.8), S_3 48–54 (51.2), Z_3 50–60 (54.8). Fourteen pairs of setae, inclusive of J_1 – J_3 , present on soft integument.

Venter (Fig. 3, B). Sternal shield 111–148 (123.7) long, 90–135 (103.9) wide at level of st_2 , bearing 2 pairs of slits and 3 pairs of setae. Anal shield 43–50 (46.4) long to postanal seta and 45–55 (50.0) wide at middle of anus. A pair of genital and other 5 pairs of setae present on soft integument.

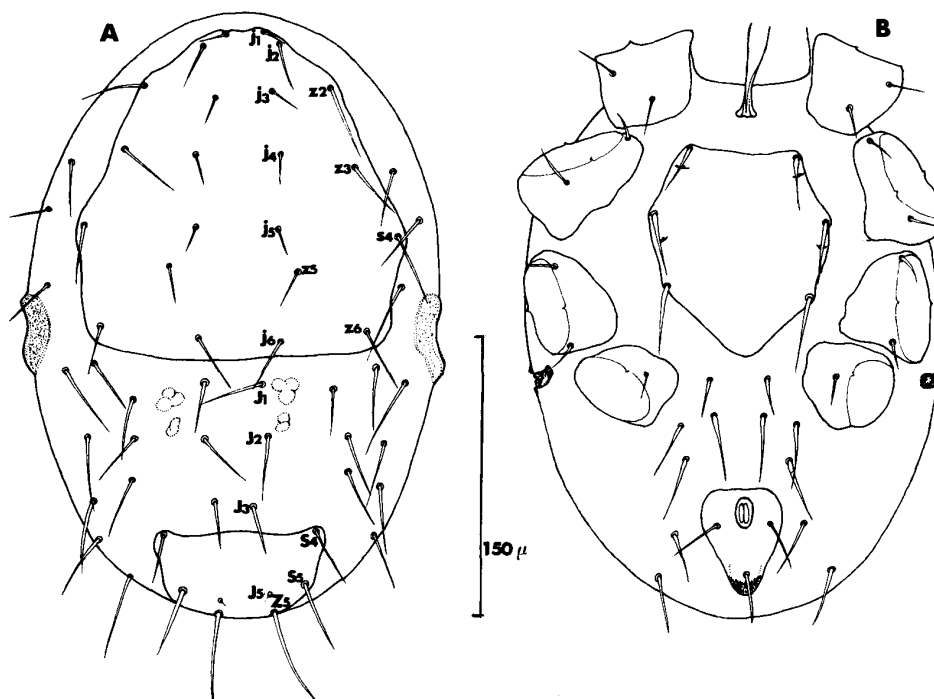


Fig. 3. *Steatonyssus nakazimai* sp. nov., protonymph. — A–B. Idiosoma in dorsal and ventral views.

Legs. Leg chaetotaxy and nature of setae normal. Tibia I 38–45 (43.2), tarsus I 65–80 (71.5), tibia IV 38–45 (40.8), tarsus IV 65–78 (72.5) long.

Materials examined. Twenty-three engorged females, 2 engorged males and 8 unfed protonymphs from a nest occupied by a young *G. japonicus* collected by Mr. Fukuo NAKAZIMA at the foot of Mt. Asama, Nagano Prefecture, Japan, on October 10, 1972; 5 engorged protonymphs from the dormouse taken from a tree-hole by the same collector at Yachiho Village, Minamisaku-gum, Nagano Prefecture, on October 20, 1972.

The holotype female, allotype male, morphotype protonymph, five each of paratype females and protonymphs are deposited in the collection of the National

Science Museum, Tokyo (NSMT-Ac 9006~9017); 4 each of paratype females and protonymphs and a paratype male in the collection of K. UCHIKAWA.

Remarks. *Steatonyssus nakazimai* sp. nov. lacks striking morphological characteristics or strong modifications. It shares many characters with other members of the genus. This probably indicates that the new mite is conservative in the speciation.

The female of the new species is separable from those of all the described species by the measurements and combination of the following characters: Podosomal shield with setae j_3 developed moderately; opisthosomal shield with 7 pairs of setae, inclusive of rather short J_2 and minute Z_5 ; sternal shield without strong sclerotized band; sternal setae st_2 developed moderately; opisthosomal integument with setae longer than $50\ \mu$; peritreme ending on posterior fourth of coxa II and peritremal shield not interrupted; deutosternum with 9 denticles; setae on dorsal and ventral integuments not modified, normally setiform. According to the key presented by TILL and EVANS (1964), the female of the new mite comes out with *S. aelloni*, but the anterior spur of coxa II, the peritremal shield and some measurements are distinctly different between the two species. The female resembles *S. javensis* in RADOVSKY's key (1967), though males of these species have different ventral structures.

The genus *Steatonyssus* is very close to *Pellonyssus* occurring only on birds. The presence of such a species shaped similar to *Steatonyssus* as *Pellonyssus biscutatus*, a parasite of woodpeckers, makes it difficult to separate the two genera distinctly, and it is easy to see how the mite may have transferred from bats to birds nesting in tree holes (RADOVSKY, 1976). The occurrence of the new *Steatonyssus* on the Japanese dormouse may also be interpreted by the specific habit of the host rodent. The dormouse usually nests and winters in tree holes, and sometimes invades human dwelling houses. Although quite different *Steatonyssus* mites are found on bats inhabiting tree holes or dwelling houses in Japan, the distribution of this genus on the rodent and Chiroptera may have been established by the co-occupation of habitats by both animals in ancient times.

It is well known that *Apodemus argenteus* and some birds frequently visit the nest sites of *G. japonicus* (NAKAZIMA, personal communication), and several mesostigmatid and trombiculid mites and fleas usually parasitic on small mammals have been found on the dormouse and in its nests (SAKAGUTI and NAKAGAWA, 1960; UCHIKAWA, 1976). Although this indicates the occurrence of exchange of parasites among rodents, no *Steatonyssus* mite has so far been recorded from other mammals than *G. japonicus*.

The present new species is named after Mr. Hukuo NAKAZIMA, who earnestly studies the ecology of the dormouse and furnished the authors with the dormouse specimens and their nest materials.

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